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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PARKER, FREDERICK JOHN	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/024,658	CHOY ET AL.	
	Examiner	Art Unit	
	Frederick J. Parker	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *37-74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *37-69* is/are allowed.

6)☒ Claim(s) *70-74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims 37-69 were previously allowed and therefore remain in the allowable status.

Claim Objections

The amendments in response to the Claim Objections of the Previous Office Action are acknowledged and appreciated, and the Examiner withdraws the objections.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 70 is rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al US 5,344,676.

Kim et al teaches a method for applying nanodrops to a substrate to form a coating film or nanoparticles (= powder, col. 3, 23). A polymeric sol-type precursor material 9 comprises a decomposable base material with a solvent which is electrostatically sprayed as liquid droplets charged with a negative or positive polarity, and an electric field generated between the charged droplets and electrode needle 14 as described provides a corona spray because the electrons are produced by the electrode to flow and charge the droplets. The entire apparatus is contained within chamber 22 . The target area is heated by heater 34 to promote reactions and specific heating temperatures dependant upon the decomposition temperature of any precursor form the desired coating material. There must inherently be a decrease in temperature as a function of

distance from the heated substrate towards the outlet. Solvent evaporation and precursor decomposition would have inherently occurred as atomized particles approach, and prior to contacting, the substrate to satisfy **the requirement of forming a coating film or nanoparticles** as stated on col. 2, 20-23; abstract; col. 4,54; and elsewhere. Coating solution is transported/fed from supply 2 to the spray outlet using capillary tube device 10 .

4. Claim 72 is rejected under 35 U.S.C. 102(b) as being anticipated by Spiller US 3754975.

Spiller teaches a method of coatings a substrate by supplying a coating solution under pressure using pump means 26/26' (col. 10,8-24; and elsewhere) comprising a solvent and decomposable metal salt ("precursor compound") which is sprayed (inherently involves "pressure feeding" via us of pump means 26/26') through a nozzle of a spray head onto the grounded, heated substrate to decompose the solution to form a coating, the heated substrate providing an increase in temperature from the spray outlet towards the heated substrate (and therefore inherently also a decreasing temperature gradient from the heated substrate towards the nozzle). The sprayed particles are guided by and adhere to the substrate by utilization of an electrostatic field between particles and substrate, the particle charging as described on col. 8, Example, etc.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness

7. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. Kim is cited for the same reasons previously discussed, which are incorporated herein. Maintaining the field during cooling is not explicitly cited. However, it remains the Examiner's position that maintaining the electrostatic field during cooling of the applied coat would have been an obvious variation to maintain the particles applied in place to the heated substrate during the cooling process while additional volatiles are driven off. Furthermore, one of ordinary skill would NOT remove the field during the process of Kim because the decomposing droplets would not be attracted to the substrate and thereby defeating the teachings of Kim, so that removal of the field after the spray is completed and during the cooling process would have simply been an obvious variation within the purview of one of ordinary skill to provide completion of the coating process. It is well-established that the artisan is presumed to know something about the art apart from what the references disclose, In re Jacoby 135 USPQ 317; The conclusion of obviousness maybe made from "common sense" and "common knowledge" of the person of ordinary skill, In re Bozek 163 USPQ 545.

Furthermore, the solvent bearing precursor goes through the thermal gradient and contacts the heated substrate where the precursor undergoes decomposition and solvent evaporation. The

latter entails the removal of heat by virtue of the inherent process of evaporation, causing at least some degree of cooling of the material deposited, a simple principle of evaporation. The claim simply does not require anything more as written, since no specific degree of cooling or outcome is required.

8. Claims 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al in view of Spiller which are cited for the same reasons previously discussed, and which are incorporated herein.

The process of Kim is provided in detail above. A specific statement that the material solution is pressure fed to an outlet is not provided. However, Spiller teaches a similar process of coating a heated substrate by supplying a coating precursor solution under pressure using pump means 26/26' for pressure feeding to provide the desired material to the substrate. Since both processes are directed towards the electrostatic deposition of precursor solutions towards and onto a heated substrate (inherently comprising a thermal gradient for decomposition of the precursor), to form a powder or film per Kim, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kim et al by incorporating the pump means 26/26' of Spiller to direct the precursor solution under pressure as an alterative means of delivering precursor solution to a heated substrate with the expectation of providing an equivalent coating or powder thereon.

Response to Arguments

Applicants arguments have been considered. In response to those regarding claims 70-74 the Examiner incorporates all previous arguments herein. In further rebuttal to substantive arguments, the Examiner provides the additional comments below.

Applicants argue on page 12, para. 6 that embodiments of fig. 1-4 relate only to films. The reference must be taken as a whole and what it fairly teaches, specifically forming a coating film **OR** nanoparticles (col. 2, 20-24; fig. 5 and col. 4, 47-54;etc). Thus Applicants' assertion is inaccurate.

Applicants argue that Kim projects droplets towards a heated substrate but that no thermal gradient is disclosed. Applicants are reminded the Examiner is claiming such a temperature gradient is inherent. The Examiner respectfully points out that while the heater adjacent the substrate may be at a given temperature, there is simply no evidence or rationale to believe that no heat rises from the heated zone, and thus no thermal gradient is formed. Using the simple principle that heat rises, heat MUST rise above the heater, with the temperature decreasing as a function of distance from the heat source, by definition a temperature gradient, as required by the claim. Put more simply, one's hand placed above a hot coil on a cooking stove would encounter heat emanating from the heat source without having to actually contact the coil, with the temperature decreasing as a function of distance from the heat source. Applicants fail to convincingly explain why such a simple concept would be absent in Kim. The rejections are therefore maintained.

Applicants argue that claim 30 of 6331330 contains the thermal gradient limitation and was allowed. True enough, but claim 30 is not the same as instant claim 70, so there is no inconsistency in applying allowance criteria by the Examiner.

Applicants also allege that Spiller, for claims 72-74, does not teach a thermal gradient. The Examiner maintains the rejections for the same reasons discussed regarding Kim: while the heater adjacent the substrate may be at a given temperature, there is simply no evidence or rationale to believe that no heat rises from the heated zone, and thus no thermal gradient is formed. Using the simple principle that heat rises, heat MUST inherently rise above the heater, with the temperature decreasing as a function of distance from the heat source, by definition a temperature gradient, as required by the claim.

Applicants arguments on page 14 regarding the thermal gradient in Spiller relates to the preheating step, not when the heated substrate is contacted with coating material as is clearly set forth in the Example; col. 3; etc. Thus Applicants' argument does not address the Examiner's position and is not convincing.

Applicants argue the Examiner used hindsight regarding claim 71. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the instant case, the Examiner articulated his reasoning for concluding obviousness on pages 4-5

of the previous Office Action. Applicants merely rebutted that by stating the Office Action "failed to demonstrate that the proposed motivation…was within the common knowledge of the skilled person". In fact, the Examiner's articulated reasoning did just that, but Applicants failed to provide evidence, arguments, or rationale to convincingly support their allegations.

As to the arguments on remarks page 15, top, regarding col. 3, 26-32, the Examiner respectfully points out this citation merely says the charging needle 18 is connected to a voltage source to cause continuous charging of the liquid. There is no fair reading that charging and actuation of the sprayer MUST occur together and simultaneously. Thus the argument is not convincing.

Applicants arguments are not convincing and the rejections are maintained.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Frederick J. Parker
Primary Examiner
Art Unit 1792

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